



## Avaya Solution & Interoperability Test Lab

---

# Application Notes for the Extreme Networks Summit X450e-48p Switch Power over Ethernet Support for Avaya IP Telephones and Avaya One-X Gateway – Issue 1.0

### Abstract

These Application Notes describe the procedures for configuring the Extreme Networks Summit X450e-48p Switch to provide inline Power over Ethernet (PoE) to Avaya 4600/5600/9600 Series IP Telephones registered to the Avaya Communication Manager, Avaya IP Office, Avaya one-X G10 PSTN Gateway, and Avaya wireless Access Point (AP). During compliance testing, Avaya IP Telephones successfully obtained power and transferred data over standard Ethernet cables from the Extreme Networks Summit X450e-48p switch. Information in these Application Notes has been obtained through compliance testing and additional technical discussions. Testing was conducted via the *DeveloperConnection* Program at the Avaya Solution and Interoperability Test Lab.

# 1. Introduction

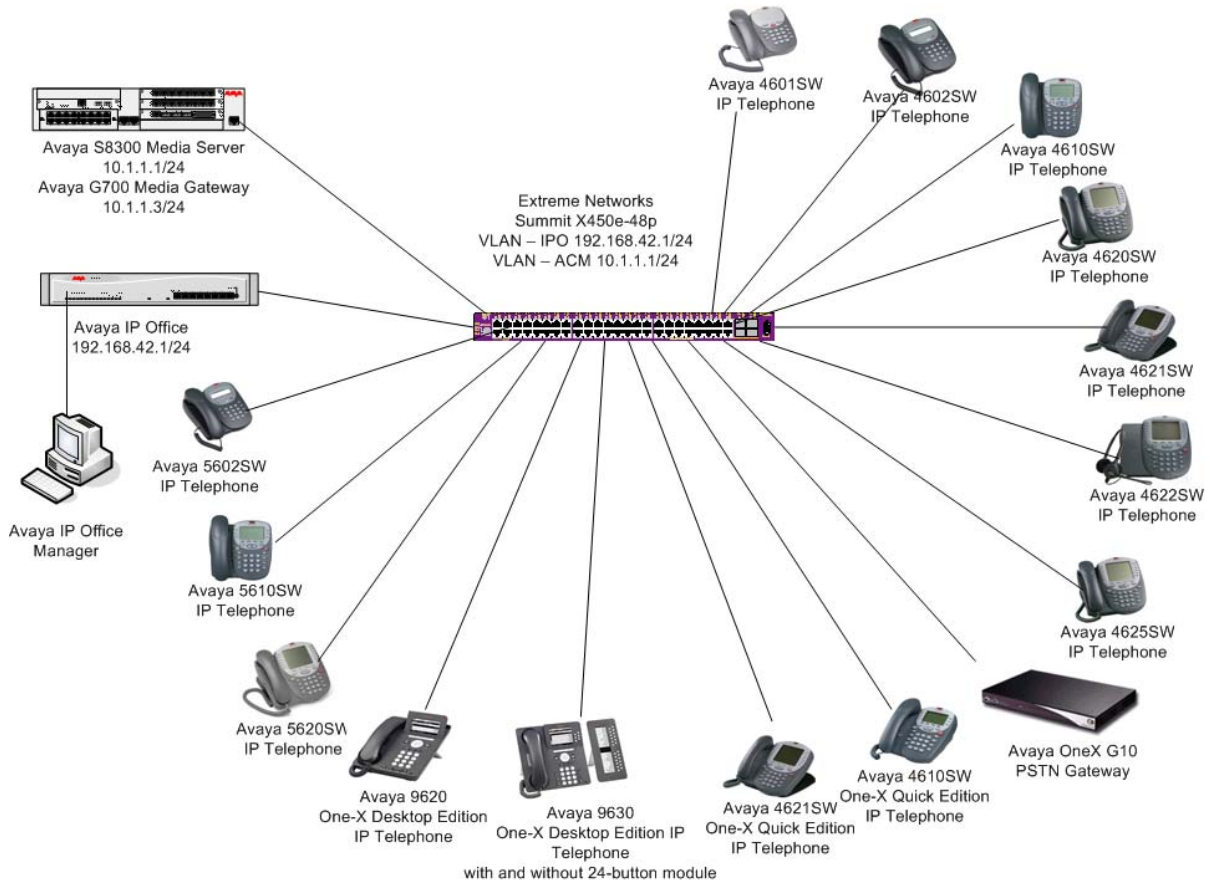
Power over Ethernet (PoE) allows both power and data to be simultaneously carried over standard Ethernet cables. PoE-enabled Ethernet switches can supply power directly to Ethernet devices, thereby simplifying installation and removing the need for separate power supplies for those devices. The IEEE 802.3af standard defines the mechanisms for Power Sourcing Equipment (PSE), such as PoE-enabled Ethernet switches, to detect, classify, and supply power to Powered Devices (PDs), such as PoE-enabled IP telephones and wireless Access Points. In the compliance-tested configuration described in these Application Notes, the Extreme Networks Summit X450e-48p is configured to supply inline PoE to Avaya PDs. No Extreme Networks specific configuration is required on Avaya Communication Manager, Avaya IP Office and Avaya one-X G10 PSTN Gateway to support this solution.

As illustrated in **Figure 1**, the Avaya PDs covered in these Application Notes include the following:

- Avaya one-X PSTN Gateway
- Avaya 9630 one-X Deskphone Edition IP Telephone with and without the SBM24 -button module
- Avaya 9620 one-X Deskphone Edition IP Telephone
- Avaya 4601SW IP Telephone
- Avaya 4602SW IP Telephone
- Avaya 4610SW IP Telephone
- Avaya 4620 IP Telephone
- Avaya 4620SW IP Telephone
- Avaya 4621SW IP Telephone
- Avaya 4622SW IP Telephone
- Avaya 4625SW IP Telephone
- Avaya 5602SW IP Telephone
- Avaya 5610SW IP Telephone
- Avaya 5620SW IP Telephone
- Avaya 4610 one-X Quick Edition IP Telephone
- Avaya 4621 one-X Quick Edition IP Telephone

## 2. Configuration

**Figure 1** illustrates the configuration used in these Application Notes. All Avaya 56xx series IP Telephones are registered with Avaya IP Office. All Avaya 46xx series and 96xx series telephones are registered with Avaya Communication Manager. Both Avaya 4610SW and Avaya 4621SW One-X Quick Edition IP Telephones are registered to the Avaya One-X G10 PSTN Gateway. **Figure 1** is for illustration purposes only and not all Avaya IP Telephones were simultaneously powered on during testing.



**Figure 1: PoE sample network configuration**

### 3. Equipment and Software Validated

The following equipment and software/firmware were used for the sample configuration provided:

Equipment	Software/Firmware
Avaya IP Office IP406V2	3.2.53
Avaya S8300 Media Server with a G350 Media Gateway	3.1.2
G350 Media Gateway	25.28.0
Avaya IP Office Manager	3.1(65)
Avaya IP Office System Monitor	3.1(65)
Avaya IP Office Phone Manager Pro	3.1.15
Avaya one-X PSTN Gateway	2.0
Avaya 9630 one-X Deskphone Edition IP Telephone with and without 24-button module	1.1
Avaya 9620 one-X Deskphone Edition IP Telephone	1.1
Avaya 4601SW IP Telephone	2.3
Avaya 4602SW IP Telephone	2.3
Avaya 4610SW IP Telephone	2.3
Avaya 4620SW IP Telephone	2.3
Avaya 4621SW IP Telephone	2.3
Avaya 4622SW IP Telephone	2.7
Avaya 4625SW IP Telephone	2.7
Avaya 5602SW Telephone	2.3
Avaya 5620SW Telephone	2.3
Avaya 5602SW Telephone	2.3
Avaya 4610SW one-X Quick Edition IP Telephone	2.0
Avaya 4621SW one-X Quick Edition IP Telephone	2.0
Extreme Networks Summit X450e-48p Switch	ExtremeXOS 11.6.1.9

## 4. Configure the Extreme Networks Summit X450e-48p Switch

This section shows the necessary steps in configuring the X450e-48p as shown in **Figure 1**.

1. In-line power is enabled by default on the X450e-48p switch.

Step	Description
1.	Connect to the X450e-48p switch and log in using the appropriate credential.  login: <i>username</i> password: <i>xxxxxxx</i>
2.	Create the VLANs on the switch.  X450e-48p.1 # <i>create vlan v10</i> X450e-48p.1 # <i>config vlan v10 tag 10</i> X450e-48p.1 # <i>config vlan v10 ipaddress 10.1.1.1/24</i> X450e-48p.1 # <i>enable ipforwarding v10</i> X450e-48p.1 # <i>create vlan v42</i> X450e-48p.1 # <i>config vlan data tag 42</i> X450e-48p.1 # <i>config vlan data ipaddress 192.168.42.1/24</i> X450e-48p.1 # <i>enable ipforwarding v42</i>
3.	Configure VLAN assignment for the ports.  X450e-48p.1 # <i>config vlan v10 add port 17-32 untagged</i> X450e-48p.1 # <i>config vlan v42 add port 33-48 untagged</i>
4.	Save the configuration  X450e-48p.1 # <i>save</i>

## 5. Interoperability Compliance Testing

The interoperability testing focused on verifying PoE interoperability between the Extreme Networks Summit X450e-48p Switch, Avaya IP Telephones and the Avaya one-X G10 PSTN Gateway.

The power tests included verification of the following after the powered device was connected to the switch:

- Successful boot operation.
- For Avaya IP Telephones, successful registration with Avaya Communication Manager or Avaya IP Office (the Avaya 5600-Series IP Telephones are only supported on IP Office).
- Completion of a test call, and raising speakerphone volume to maximum value.

- Connecting a mix of Avaya IP Telephones Point to the switch, power cycling the switch and verifying successful boot operation and registration of the devices to the Avaya Communication Manager.

## 5.1. General Test Approach

The general test approach was to:

- Connect the Avaya IP Telephones and Avaya one-X G10 PSTN Gateway to ports on the Summit X450e-48p and verify that they successfully boot.
- Calls were made with background data to verify that power and data can be simultaneously carried on the PoE connections. Phone calls were made from the IP Telephones with data traffic also being generated.

## 5.2. Test Results

All Power over Ethernet test cases completed successfully. The Extreme Summit X450e-48p switch successfully provided inline power to the different Avaya IP telephones and G10 PSTN Gateway.

**Table 1** below lists the IEEE 802.3af class, allocated power, and measured power of the Avaya IP Telephones and Avaya one-X G10 PSTN Gateway when connected to the Extreme Summit X450e-48p. The power listed as measured by the Extreme PoE switch is for an idle phone. Cable length and impedance affects power usage, so the measurements listed here may vary based on the cable used.

Avaya Powered Device	802.3af Class	Volts	Measured Power (W) (Idle)
4601SW	2	50.2	3.2
4602SW	2	50.2	3.3
4610SW	2	50.1	3.2
4620	3	50.1	7
4620SW (class3) (*)	3	50.1	5.3
4620SW (class2) (*)	2	50.1	5.3
4621SW	2	50.1	4.1
4622SW	2	50.2	5.3
4625SW	3	50.1	8.2
5602SW	2	50.1	3.2
5610SW	2	50.1	3.3
5620SW	2	50.1	3.8
9620	2	50.2	4.7
9630	2	50.2	4.9
9630 with 24-button module	2	50.1	5.5
one-X 4610SW	2	50.1	3.3
one-X 4621SW	2	50.1	4.9
one-X G10 PSTN gateway	0	50.1	4.4

**Note:** To tell the difference between a 4620SW Class3 IP Phone that was made before 11/04 and a 4620SW Class2 IP Phone made after 11/04, look at the bottom right corner of the phone at the mic input. The Class2 phones have one hole and the Class3 phones have two holes.

**Table 2** below summarizes the IEEE 802.3af classes.

Class	PSE Output Max. Power (W)
0	15.4
1	4.0
2	7.0
3	15.4
4	Treat as Class 0

## 6. Verification Steps

Inline Power over Ethernet (PoE) is supported on the Extreme Summit X450e-48p Switch. By default, PoE support is enabled on the system and on all ports.

- Use the “show inline-power config ports <portlist>” command to verify if in-line power is enabled.

- 

```
X450e-48p.57 # show inline-power config ports 23
```

Port	Config	Operator Limit	Priority	Label
23	Enabled	15400 mW	Low	

- Use the “show inline-power info ports <portlist>” command to display in-line power information.

```
X450e-48p.57 # show inline-power info ports 23
```

Port	State	Class	Volts	Curr (mA)	Power (Watts)	Fault
23	delivering	class0	50.1	91	4.400	None

- Use the “show inline-power info detail ports <portlist>” command to display detailed in-line power information.

```
X450e-48p.61 # show inline-power info detail ports 27

Port 27

Configured Admin State: enabled
Inline Power State      : delivering
MIB Detect Status      : delivering
Label                  :
Operator Limit         : 15400 milliwatts
PD Class               : class2
Max Allowed Power      : 7.0 W
Measured Power         : 4.900 W
Line Voltage           : 50.1 Volts
Current                : 98 mA
Fault Status           : None
Detailed Status        : valid resistor detected, 802.3a
Priority                : low
```

## 7. Support

For technical support on Extreme Networks products, consult the support pages at <http://www.extremenetworks.com/services> or contact the Extreme Networks Worldwide TAC at:

- Toll free: 800-998-2408
- Phone: 408-579-2826
- E-mail: support@extremenetworks.com

## 8. Conclusion

These Application Notes describe the steps for configuring the Extreme Networks Summit X450e-48p to provide inline Power over Ethernet (PoE) to the Avaya PDs, Avaya 9600 Series IP Telephones, Avaya 4600 Series IP Telephones, Avaya G10 PSTN Gateway and Avaya 5600 Series IP Telephones.



## 9. Additional References

Product documentation for Avaya products may be found at <http://support.avaya.com>

- [1] *Administrator Guide for Avaya Communication Manager*, Doc # 03-300509, Issue 2.1, May 2006
- [2] *Avaya Communication Manager Advanced Administration Quick Reference*, Doc # 03-300364, Issue 2, June 2005
- [3] *Administration for Network Connectivity for Avaya Communication Manager*, Doc # 555-233-504, Issue 11, February 2006
- [4] *Avaya IP Telephony Implementation Guide*, May 1, 2006

Product documentation for Extreme Networks products may be found at <http://www.extremenetworks.com>

- [5] *ExtremeWare XOS Concepts Guide, Software Version 11.6*, Part number 100247-00 Rev. 01, 2006
- [6] *ExtremeWare XOS Command Reference Guide, Software Version 11.6*, Part number 100246-00 Rev. 01, 2006

---

**©2007 Avaya Inc. All Rights Reserved.**

Avaya and the Avaya Logo are trademarks of Avaya Inc. All trademarks identified by ® and ™ are registered trademarks or trademarks, respectively, of Avaya Inc. All other trademarks are the property of their respective owners. The information provided in these Application Notes is subject to change without notice. The configurations, technical data, and recommendations provided in these Application Notes are believed to be accurate and dependable, but are presented without express or implied warranty. Users are responsible for their application of any products specified in these Application Notes.

Please e-mail any questions or comments pertaining to these Application Notes along with the full title name and filename, located in the lower right corner, directly to the Avaya Developer*Connection* Program at [devconnect@avaya.com](mailto:devconnect@avaya.com).